

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>VJ204067PCT</b>		<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416																								
International application No. <b>PCT/FR2004/001651</b>	International filing date (day/month/year) <b>28.06.2004</b>	Priority date (day/month/year) <b>27.06.2003</b>																									
International Patent Classification (IPC) or national classification and IPC <b>C03C17/22, C03C17/245, C23C14/34</b>																											
Applicant <b>SAINT-GOBAIN GLASS FRANCE</b>																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>6</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand		Date of completion of this report																									
Name and mailing address of the IPEA/EP		Authorized officer																									
Facsimile No.		Telephone No.																									

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/001651

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- ☐ international search (Rule 12.3 and 23.1(b))  
☐ publication of the international application (Rule 12.4)  
☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☐ the international application as originally filed/furnished

☒ the description:

pages 1-17 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

nos. 1-31 as originally filed/furnished

nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the drawings:

sheets 1/1 as originally filed/furnished

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-31	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

## 1. Reference is made to the following documents:

D1 EP-A-0 601 928  
D2 US-A-5 532 062  
D3 US-A-5 770 321  
D4 WO-A-02 46491  
D5 US-A-5 454 919  
D6 US-A-6 190 511  
D7 US-A-6 086 727  
D8 Mitary S ET AL: "Preparation de couches minces de Ag<sub>2</sub>O et action de certains gaz sur celles-ci / preparation of Ag<sub>2</sub>O thin films and the action of certain gases on the thin solid films", Elsevier-Sequoia S.A., Lausanne, CH, vol.46, no.2, 17 October 1977, pages 201-208, XP 001073840, ISSN: 0040-6090  
D9 US-A-6 500 676  
D10 US-A-6 002 208  
D11 US-A-5 962 080.

## 2. Inventive step

The present application fails to meet the requirements of PCT Article 33(1), since the subject matter of claims 1 to 31 does not involve an inventive step as defined by PCT Article 33(3).

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

## 2(a) Claim 1

D1, which is considered to be the prior art closest to the subject matter of claim 1, describes (column 1, lines 1 to 24; column 2, line 13 to column 4, line 57; column 5, lines 8 to 49; examples 1 to 7; claims 1 to 15) a substrate, in particular made of glass, having very low roughness,

- coated with at least one dielectric thin film (5 to 30 nm), which film is:
  - made of oxide(s), nitride(s) or oxynitride(s) (of Zn, Sn, Ta, Si);
  - deposited by cathode sputtering, in particular magnetic field assisted;
  - reactive in the presence of oxygen and/or nitrogen;
  - and exposed to at least one ion beam.

Consequently, the subject matter of claim 1 differs from this known substrate in that the dielectric film exposed to the ion beam is crystallised.

The problem that the present invention is intended to solve can be considered to be that of increasing the physical and/or chemical durability of the film and also reducing the roughness thereof.

The solution to this problem, as proposed in claim 1 of the present application, is not considered inventive (PCT Article 33(3)) for the following reasons.

The fact that crystallising the dielectric film(s) exposed to the ion beam enhances the physical and/or

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
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chemical durability of the film and also reduces the roughness is known from the prior art, for example:

- from D2 (column 2, lines 1 to 63; column 3, line 1 to column 5, line 62; claims 1 to 21),
- from D4 (page 2, line 9 to page 5, line 29; page 7, line 26 to page 8, line 24; page 9, line 4 to page 12, line 6; claims 1 to 20),
- from D9 (column 1, line 40 to column 2, line 63; column 3, line 35 to column 5, line 63; claims 1 to 47).

In the light of D1 to D11 and the corresponding passages cited in the international search report, dependent claims 2 to 14 contain no feature which, when combined with the features of any one of the claims to which they refer, defines subject matter that complies with the PCT requirements of novelty and/or inventive step.

2(b) Claim 15 (glazing)

The same argument applies, *mutatis mutandis*, to the subject matter of independent claim 15, which is therefore not inventive either, since D1 to D8 disclose glazing.

2(c) Claim 16 (deposition method)

Generating an ion beam in a sputtering chamber is known from the prior art (see D1 to D11 and the corresponding passages cited in the international search report).

In the light of D1 to D11 and the corresponding passages cited in the international search report, dependent claims 17 to 28 contain no feature which, when combined with the features of any one of the claims to which they

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refer, defines subject matter that complies with the PCT requirements of novelty and/or inventive step.

3. Claim 29 (facility for deposition onto a substrate)

The combination of features of independent claim 29,

namely:

a facility for deposition onto a substrate (in particular glass) comprising

- a sputtering chamber (cathode, for example magnetic field assisted);
- at least one linear ion source capable of creating at least one ion beam;

is known from the prior art (see D1 to D11 and the corresponding passages cited in the international search report).

In the light of D1 to D11 and the corresponding passages cited in the international search report, dependent claims 30 to 31 contain no feature which, when combined with the features of any one of the claims to which they refer, defines subject matter that complies with the PCT requirements of novelty and/or inventive step.